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XLIV.—*Some Notes on British Ophiurids.*

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In revising the names and specific diagnoses of the British Ophiurids I have made one or two notes which it may be useful to publish.

1. *Ophiothrix fragilis* and *O. Luetkeni.*

Some time since (Journ. Mar. Biol. Assoc. (n. s.) i. p. 325) I ventured to say "Before long I hope to be able to marshal the evidence regarding the variability of *O. pentaphyllum* which is in my possession in such a way as to justify the doubts which Sir Wyville Thomson always had as to the distinctness of *O. Luetkeni.*"

The passage of a year has not diminished my knowledge of the variability of what I called *O. pentaphyllum*, because I was at the time using the nomenclature adopted by Mr. Lyman (*cf.* Bull. Mus. Comp. Zool. iii. p. 249); but a close examination of several specimens leads me to think that I cannot perform the promise that I made.

No absolute specific diagnosis has ever been made of what may appropriately be called Lütken's *Ophiothrix*; Thomson ('Depths of the Sea,' p. 100) regarded it as a variety of *O. fragilis,* and dedicated it "doubts and all" to Lütken.

In his invaluable critical study of the *Ophiotriches* of European waters Lyman (*t. c.* pp. 240–250) indicates some of the characters of *O. Luetkeni,* as he does also in his "key" to the species of *Ophiothrix* which he gives in his Report on the 'Challenger' Ophiurids; but, as I have already said, no definite specific diagnosis has been drawn.

Before going any further it is necessary to interpose a few words as to the name to be given to our common British species. Mr. Lyman was able to distinguish between the northern *O. fragilis* and the southern *O. pentaphyllum*; but, only a little later, he reports "*O. pentaphyllum*" from the Faroe Channel. This single little fact will show the great difficulty in discriminating and naming specimens of *Ophiothrix* better than any statement of mine. With all respect to Mr. Lyman I must be allowed to say that Dr. Lütken's views as to the identity of *O. fragilis* and *O. pentaphyllum* seem to represent better the facts of the case; and as *O. fragilis* is the older name, I shall henceforth use it for the common British *Ophiothrix.*

Though varying somewhat in size, *O. fragilis* is never a large species; *O. Luetkeni* may be roughly said to be twice as large. In the former the upper surface of the arms is distinctly keeled, each upper arm-plate projects forwards, and its aboral end is knobbed; these are some of the most characteristic marks of *O. fragilis,* but they seem to be altogether wanting in *O. Luetkeni.* The possession of minute spines by these upper arm-plates in the latter has been noted by Mr. Lyman, and is a very fairly constant character. The spines seem to vary more than he imagined, for there are specimens in which the stunting of the spines is so general that it is difficult to believe it is artificial.

It will, perhaps, be most convenient if I attempt first of all to draw up the specific diagnosis of the better-known species and then give one for *O. Luetkeni.*

Ophiothrix fragilis, L.

A species which exhibits the greatest variations in colour and marking and in the presence or absence of spines from the disk; of moderate size.

Arms very fragile, about eight to twelve times as long as the radius of the disk. The scales on the upper surface of the disk often form projecting spinules, but may be almost completely hidden by elongated delicate spines; the interrachial spaces below covered with fine spines. The triangular radial shields are of large size and are bare, except for a few spines which may be present on the inner side of their base. Each is separated from its fellow by a few laterally compressed scales on which are spinous granules or short spines. The teeth-papillæ are exceedingly numerous, and beneath the clump are seven teeth. The arms are rather delicate; the upper arm-plates have a concave proximal and a strongly convex distal edge; the upper surface is carinate and the distal end of the keel forms a knob. The side arm-plates extend considerably on the proximal part of these plates and carry about seven spines, of which the uppermost is shorter than the next three or four, but not so short as the lowermost two or three. There is one tentacle-scale. The under arm-plates have the distal edge wider than the proximal and often concave outwards.

r.	R.
8	76 (arms broken).
5·5	55 ,, ,,
4·5	41
3·7	28

Ophiothrix Luetkeni, Wyv. Th.

A stout, well-grown species. Arms about ten times as long as the radius of the disk. The scales on the disk not unlike those of *O. fragilis*, and, as in it, they may or may not be covered with spines. The interbrachial spaces have the middle third occupied by fine spines, the sides bare. The triangular radial shields differ chiefly from those of *O. fragilis* in not having the spines or spinous granules confined to one angle. Teeth-papillæ coarse. Arms broad, flat, strong. The upper arm-plates somewhat variable in form, but always with a few fine spines, hardly at all carinate, with pretty even proximal and distal edges. Spines coarser and rather shorter than in *O. fragilis*, about seven in number. The lower arm-plates with a concavity outwards, but this is not very obvious in full-grown specimens. One tentacle-scale.

Colour white or banded and spotted with red or purplish.

The difference in size, the stouter arms and coarser spines, the bare interbrachial spaces, the spines on the radial shields and upper arm-plates, the loss of the keel, are sufficient to justify the distinctness of *O. Luetkeni*, at any rate in the present state of our knowledge.

2. *The Use of the Generic Term* Ophiura.

Since the commencement of his important work on Ophiurids, Mr. Theodore Lyman has used the name *Ophiura* for those

Ophiurids which were called *Ophioderma* by Müller and Troschel and which are distinguished by the apparent duplicity of their bursal clefts. This course he justified by citing one of the greatest authorities on Ophiurids—Dr. Lütken—who had declared two years previously that the type of Lamarck's genus *Ophiura* was *O. longicauda*, which is an *Ophioderma* in the sense of Müller and Troschel *.

I cannot tell whether Mr. Lyman accepted this statement of Dr. Lütken's without verifying it, or whether he looked upon the second species of an author's genus as being the type. If he did not verify the assertion he must be blamed; because if he had the readers of the 'Annals' would not have been burdened with this note. If he regards the second species as the type of a genus he is doing no more than exercising the privileges of a free man, and if he does not interfere with the liberty of others no one has the least right to complain.

But the questions are rather, (1) Was Dr. Lütken right? and (2) Was *Ophiura* at Mr. Lyman's disposal?

What Dr. Lütken thinks about it we are told in a footnote to p. 87 of vol. viii. (ser. 5) of the Dansk. Vid. Selsk. Skrifter (1870), where he says:—"Som bekjendt har Lyman ført Navnet *Ophiura* tilbage til *Ophioderma*-Slaegten og omdøbt Forbes' *Ophiura* til *Ophioglypha*. Skjøndt jeg maaskee selv har givet Anledning dertil ved hvad jeg (Addit. i. S. 31) har bemaerket om Anvendelsen af Navnet *Ophiura*, er jeg dog nu ikke vis paa, at det just var det rette."

In 1836 Agassiz † divided the existing species of Lamarck's genus *Ophiura* into *Ophiura* and *Ophiocoma*, and gave as types of the former "*O. texturata*, Lam.—*O. lacertosa*, Lam. &c." In 1839 E. Forbes ‡ gave a definition of *Ophiura* which would apply to *O. texturata*, Lamk., but not to *O. lacertosa*, Lamk., and in 1842 Müller and Troschel gave the name *Ophioderma* to the group of which the latter is the type.

By 1842, then, the partition of Lamarck's genus *Ophiura* as emended by Agassiz was completed, and no spoil was left for Mr. Lyman.

It follows therefore that those writers who have continued to use *Ophioderma* and have not allowed *Ophioglypha* to displace *Ophiura* are correct.

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* See Proc. Boston Soc. N. H. vii. (1861) p. 197.

† Mém. Soc. Neuchâtel, i. p. 192.

‡ Mem. Wern. Soc. viii. p. 125.

3. *What is the Correct Name for the Common Sand-Star?*

This species has been called *Ophioglypha ciliata* by many. As has just been shown, it must be called *Ophiura* at any rate.

The earliest known *Asterias ciliata* is generally stated to be that of Retzius, the date of which is 1783, and not, as sometimes stated, 1805; but there is an earlier *A. ciliata*—that of O. F. Müller (1776)—which is clearly the same as *Asterias fragilis*, Linn.

So *ciliata* cannot be used.

But Retzius in his synonymy gives *A. ciliaris*, Linn., as a synonym of *A. ciliata*; reference to the figures cited by Linnæus from Linck shows that more than one species was included by him under that name, but an inspection of the figures of Barrelier shows that what we have called *O. ciliata* is to be taken as meant.

So, then, we have

Asterias ciliaris, Linn. (1766)* (part), = *O. ciliata*, auctorum (nec Houtyn, Linn. Nat. Hist. xiv. (1770), pl. cxiii. fig. 5).

Asterias ciliata, O. F. Müller (1776), = *Ophiothrix fragilis*, L.

A. ciliata, Retz (1783), = *A. ciliaris*, L. (part).

A. ciliaris, Lamk. (1801), = *Ophiothrix fragilis*.

4. *Asterias noctiluca*, Viviani.

Those authors, with one exception, who have taken the trouble to refer to Viviani's description of *Asterias noctiluca* (Phosphor. mar. (1805) p. 5) regard the name as synonymous with *Amphiura squamata*, which, again, appears to be a synonym of *Amphiura elegans*. This last specific name was applied in 1815 by Leach to an Ophiurid; but Viviani's tract bears date 1805. From Viviani's description, however, it is impossible to say that he definitely describes this common small form; and as we know that young Ophiurids of many kinds are phosphorescent, it is better to adopt the very sensible view of Messrs. Dujardin and Hupé that it is only a young form. It was possibly applied by its author to the young of several distinct species. I gather from Mr. Stebbing's 'Challenger' Report (*s. v.* "Viviani") that carcinologists have not been successful in determining the species of Crustacea described by Viviani in the pamphlet just alluded to.

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* The remaining part of *A. ciliaris*, L., seems to be *O. fragilis*, and as the *Ophiothrix* forms get a name from that day, the remaining must be called *O. ciliaris*.

5. *What is the Correct Specific Name of the "Shetland Argus"?*

To this species Forbes (1840) applied Linck's pre-Linnean and *generic* name of *Astrophyton scutatum*, generic not only because he calls it distinctly "genus," but because he distinguishes as "species"—"(1) Scuto rotato, ramis similaribus ex mari albo," "(2) Aliud Musei Regii Dresdensis," and "(3) Scuto striato pulvinato, ramis nodosis et frequentibus denticulis asperis;" it is therefore no more reasonable to write "*Astrophyton scutatum* (pars), Linck," among the synonyms of a species than it would be to write *Asterias* (pars), Linnæus.

Mr. Lyman calls the species *Gorgonocephalus Linckii*, applying Müller and Troschel's specific name (1842). Forbes without a query sign, Lyman with one, quote *Asterias caput-medusæ*, Linnæus; the latter refers to the 'Fauna Suecica,' without, however, saying that it is the second edition of that work which he quotes, the former to the 'Systema Naturæ.'

In neither case does the Linnean description afford any clue to any thing more than the genus, and neither author quotes the much fuller description which is to be found in the 'Museum regis Adolphi Frederici' (1754), p. 95; as this appears to be but little known I have reproduced it in a footnote [*].

Even from this, however, it is impossible to be certain what species Linnæus had before him; and as he gives the Indian and southern oceans as well as the seas of Norway as the habitat, it seemed to me probable that more than one species, as we understand them, was before him. In this difficulty I turned as usual to the friendly assistance of Prof. Lovén, and, also as usual, I got the help I sought; Prof. Lovén tells me that in his opinion the specimen which was before Linnæus is in the Stockholm Museum, and that it is an example of the *A. verrucosum* of Lamarck.

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[*] "*Asterias radiata*; *radiis dichotomis.*

"*Caput Medusæ.* Rumph. Mus. 41. t. 16.

"Habitat non tantum in OCEANO versus Norvegiam, sed et in australi et Indico.

"*Corpus* stella 5-fida, convexa, angulis in radios exeuntibus. *Radii* geminati, basi uniti, scabri. Foramen inter singulos lobos corporis utrinque. "*Centrum* hispidum supra ore quinquefido. *Rami* articulati, dichotomi innumeris dichotomiis, sensim tenuiores, pedales, sesquipedales: supra, utrinque, serie simplici ex punctis scabris, 4 s. 5. mucronibus."

By writers on the British fauna the specific names *arborescens*, *caput-medusæ*, and *scutatum* have been used respectively by Pennant, Turton, Fleming and Couch; but in no one case is it possible to say with certainty whether or no they are speaking of the "Shetland Argus."

I cannot, I fear, pretend to the skill in divining intentions which is sometimes so marked a gift of the synonymist. Pennant, for example, gives nothing that to-day we can call a specific character; his reference to Linnæus's *caput-medusæ* is of no help. Pontoppidan is as entertaining as ever, but it is impossible to be sure what his species was.

Turton seemed to be more promising with his reference to Barbut and Shaw; the latter (Miscell. pl. ciii.) seems to have given his artist a Mediterranean form, while Barbut's figure (pl. x. fig. 12) is not as good as most of his.

In fine, the first description recognizable by me is that of Edward Forbes; and I venture to submit that no earlier description can with any confidence be said to apply to what we know as the "Shetland Argus."

It may perhaps be urged that, as there is only one British species of the genus, it is a refinement of exactness to pretend to be in ignorance of what these authors meant; but the premiss is not founded on fact, first because *Gorgonocephalus eucnemis* has been dredged by the 'Triton' in the Faroe Channel at a depth of 433 fathoms, and because of the geographical distribution ascribed to the "Shetland Argus"; this is a most important point—when a species is found in Norway, at Shetland, and the Orkneys it very often happens that it is not found further south otherwise than as a deep-sea form or as one of very extensive range. I cannot recall any species which is certainly known from Shetland and from Cornwall and not any intermediate station. The chances are that the Shetland form is a northern, the Cornwall a more southern or even Mediterranean form. The very distribution therefore leads one to suppose that two species have been found in the British seas[*].

The difficulties that beset the student of English authorities are, with the exception of Lamarck, who appears to make,

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[*] I should like to point out that, although we are not in science bound by such laws of evidence as brought rebuke on Sam Weller for repeating what the soldier said, yet the repeated citation of Borlase as the authority for Cornwall rests not on any statement in his own works, but on the remark of Pennant, "The late worthy Dr. William Borlase informed me that it had been taken off Cornwall."

pace Forbes, no reference to the species, not diminished by foreign writers; de Blainville's synonymy is most confusing, Agassiz was clearly in doubt as to what was *A. scutatum* and what *A. verrucosum*.

Müller and Troschel do not appear to have been satisfied with Forbes's description of "*A. scutatum*," and there can be no doubt that much confusion would result if that specific name were to be used; the term with which it is most often confounded is *verrucosum*, and that goes now that we know that it is synonymous with the *caput-medusæ* of Linnæus. *Scutatum*, then, should not usurp the place long occupied by the specific name given by Müller and Troschel.

Gorgonocephalus Linckii.

? *Astrophyton arborescens*, Penn. Brit. Zool. iv. (1777) p. 56 (non M. & Tr.).
? *Asterias caput-medusæ*, Turt. Brit. Faun. (1801) p. 140.
? *Astrophyton scutatum*, Flem. Brit. An. (1827) p. 489; Couch, Corn. Faun. i. (1838) p. 84 (non Gould, Inv. Mass. (1841) p. 345).
? *Euryale scutatum*, de Bl. Actin. (1834) p. 246.
Astrophyton scutatum, Forbes, Brit. Starf. (1840) p. 67 (non Agassiz, Mém. Soc. Neuch. ii. (1839), Notice &c., p. 11.
Astrophyton Linckii, M. & Tr. Syst. Ast. (1842) p. 122; Lyman. Ill. Cat. Mus. Zool. i. (1865) p. 190; Norman, Ann. & Mag. Nat. Hist. xv. (1865) p. 105.
Gorgonocephalus Linckii, Lyman, Chall. Rep. xiv. (1882) p. 264; Hoyle, Proc. R. Phys. Soc. Edinb. viii. (1885) p. 138.

XLV.—*Remarks on the Genus* Heterolepis, *Smith.*

By G. A. BOULENGER.

ALTHOUGH specimens of the West-African *Heterolepis poensis* have been frequently received during the forty years that have elapsed since the establishment, by Andrew Smith, of this curious genus of Snakes, the type species, *H. capensis*, remained one of the British Museum's most important desiderata. I was therefore extremely pleased to receive a few days ago, through the kindness of Mr. Trimen and Mr. Péringuey, of the South-African Museum, a specimen from Delagoa Bay, consisting of the head and anterior part of the body and the tail, of what I take to be the long-desired *H. capensis*.

This specimen agrees so well with Peters's *H. Gueinzii*, from Port Natal, that I entertain no doubt as to the identity of the two. The late Prof. Peters felt in fact very doubtful as to the propriety of separating *H. Gueinzii* from *H. capensis*,